

Amendment and Response
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AMENDMENTS TO THE CLAIMS

1. (Original) A printing plate precursor comprising:
a substrate; and
an imageable coating on the substrate, the imageable coating comprising a
sulfated phenolic resin having an average molecular weight in the range of
about 1 kDa to about 500 kDa.

2. (Original) The printing plate precursor of claim 1, wherein the substrate includes an
oleophobic surface that is in contact with the imageable coating.

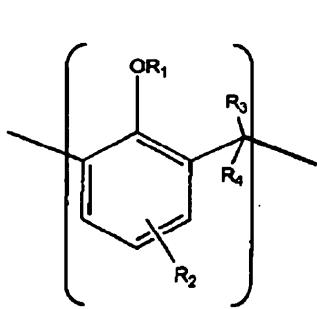
3. (Original) The printing plate precursor of claim 1, wherein the substrate includes a
hydrophilic surface that is in contact with the imageable coating.

4. (Original) The printing plate precursor of claim 1, wherein the substrate is a hydrophilic
aluminum sheet.

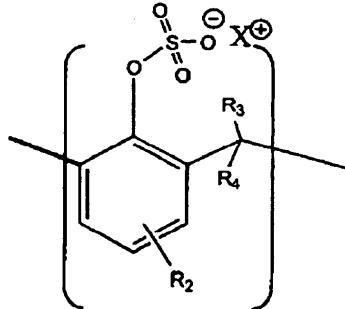
5. (Original) The printing plate precursor of claim 1, wherein at least about 50% by weight of
the imageable coating is the sulfated phenolic resin.

6. (Original) The printing plate precursor of claim 1, wherein the sulfated phenolic resin
comprises a resin selected from the group consisting of sulfated novolak resins and sulfated
resole resins.

7. (Currently amended) The printing plate precursor of claim 1, wherein the sulfated phenolic
resin includes units having the structure A and units having the structure B,



A



B

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wherein substituents R_1 , R_2 , R_3 , and R_4 are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, alkaryl, or aralkyl; X^\oplus represents a positively charged counterion; and the ratio m is defined as the ratio of the number of B units to the sum of the number of A units plus the number of B units, and m in the range from about 0.25 to 1.0.

8. (Original) The printing plate precursor of claim 7, wherein m is greater than about 0.5.
9. (Original) The printing plate precursor of claim 7, wherein X^\oplus represents a positive ion selected from the group consisting of lithium ion, potassium ion, and sodium ion.
10. (Original) The printing plate precursor of claim 7, wherein X^\oplus represents a positive ion selected from the group consisting of ammonium, alkylammonium, aryl ammonium, cyclic ammonium, pyrrolidinium, pyridinium, diazonium, sulfonium, and iodonium.
11. (Original) The printing plate precursor of claim 7, wherein X^\oplus is ammonium.
12. (Original) The printing plate precursor of claim 1, wherein the imageable coating is soluble in water.
13. (Original) The printing plate precursor of claim 1, wherein the imageable coating comprises a radiation-absorbing component.
14. (Original) The printing plate precursor of claim 13, wherein the radiation-absorbing component comprises a pigment.
15. (Original) The printing plate precursor of claim 13, wherein the radiation-absorbing component comprises one of the group consisting of carbon black, Heliogen Green, Nigrosine Base, iron (III) oxide, manganese oxide, Prussian blue, Paris blue.
16. (Original) The printing plate precursor of claim 13, wherein the radiation-absorbing component includes a dye.
17. (Original) The printing plate precursor of claim 13, wherein the radiation-absorbing component includes an infrared-absorbing dye.

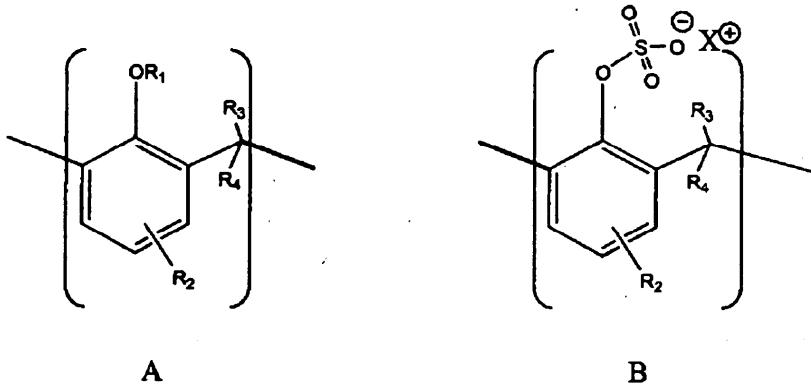
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18. (Original) The printing plate precursor of claim 13, wherein the radiation-absorbing component includes a dye selected from the group consisting of cyanine dyes, squarylium dyes, and oxonol dyes.
19. (Original) The printing plate precursor of claim 1, wherein the imageable coating comprises a binder selected from the group consisting of polyvinyl pyrrolidone, polyvinyl alcohol, polyacrylamide, polyacrylic acid, polyvinylimidazole, polyethyleneimine, poly(ethyloxazoline), gelatin, starches, dextrin, amylogen, gum arabic, agar, algin, carrageenan, fucoidan, laminaran, corn hull gum, gum ghatti, karaya gum, locust bean gum, pectin, guar gum, hydroxypropylcellulose, hydroxyethylcellulose, hydroxypropylmethylcellulose, and carboxymethylcellulose.
20. (Original) The printing plate precursor of claim 1, wherein the imageable coating comprises a polymeric binder.
21. (Original) The printing plate precursor of claim 20, wherein the binder is polyvinyl pyrrolidone having a molecular weight in the range of about 40 kDa to about 1500 kDa.
22. (Original) The printing plate precursor of claim 20, wherein not more than about 30% by weight of the imageable coating is the binder.
23. (Original) A method of making a printing plate precursor having an imageable coating on a substrate, the method comprising:
applying to the substrate a composition comprising a solvent and a sulfated phenolic resin dispersed in the solvent, the sulfated phenolic resin having an average molecular weight in the range of about 1 kDa to about 500 kDa; and
removing at least some of the solvent to leave an imageable coating on the substrate, to obtain the printing plate precursor.
24. (Original) The method of claim 23, wherein the solvent comprises water and the composition is neutral or basic.
25. (Original) The method of claim 23, wherein the solvent is water that is free from organic solvents.

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26. (Original) The method of claim 23, wherein the sulfated phenolic resin comprises a resin selected from the group consisting of sulfated novolak resins and sulfated resole resins.

27. (Currently amended) The method of claim 23, wherein the sulfated phenolic resin includes units having the structure A and units having the structure B,



wherein substituents R₁, R₂, R₃, and R₄ are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, alkaryl, or aralkyl;

X[⊕] represents a positively charged counterion; and

the ratio m is defined as the ratio of the number of B units to the sum of the number of A units plus the number of B units, and m in the range from about 0.25 to 1.0.

28. (Original) The method of claim 27, wherein m is greater than about 0.5.

29. (Original) The method of claim 27, wherein X[⊕] represents a positive ion selected from the group consisting of lithium ion, potassium ion, and sodium ion.

30. (Original) The method of claim 27, wherein X[⊕] represents a positive ion selected from the group consisting of ammonium, alkylammonium, aryl ammonium, cyclic ammonium, pyrrolidinium, pyridinium, diazonium, sulfonium, and iodonium.

31. (Original) The method of claim 27, wherein X[⊕] is ammonium.

32. (Original) The method of claim 23, wherein the composition includes a binder selected from the group consisting of polyvinyl pyrrolidone, polyvinyl alcohol, polyacrylamide, polyacrylic acid, polyvinylimidazole, polyethyleneimine, poly(ethyloxazoline), gelatin, starches, dextrin,

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amylogen, gum arabic, agar, algin, carrageenan, fucoidan, laminaran, corn hull gum, gum ghatti, karaya gum, locust bean gum, pectin, guar gum, hydroxypropylcellulose, hydroxyethylcellulose, hydroxypropylmethylcellulose, and carboxymethylcellulose.

33. (Original) The method of claim 23. wherein the composition includes a polymeric binder.
34. (Original) The method of claim 33. wherein the binder is a water-soluble polymer and the solvent comprises water.
35. (Original) The method of claim 33. wherein the binder is polyvinyl pyrrolidone having a molecular weight in the range of about 40 kDa to about 1500 kDa.
36. (Original) The method of claim 23. wherein the composition includes a radiation-absorbing component.
37. (Original) The method of claim 36. wherein the radiation-absorbing component comprises a pigment.
38. (Original) The method of claim 36. wherein the radiation-absorbing component comprises one of the group consisting of carbon black, Heliogen Green, Nigrosine Base, iron (III) oxide, manganese oxide, Prussian blue, Paris blue.
39. (Original) The method of claim 36. wherein the radiation-absorbing component includes a dye.
40. (Original) The method of claim 36. wherein the radiation-absorbing component is an infrared-absorbing dye.
41. (Original) The method of claim 36. wherein the radiation-absorbing component includes a dye selected from the group consisting of cyanine dyes, squarylium dyes, and oxonol dyes.
42. (Original) The method of claim 23. wherein the solvent comprises water and the composition includes a water-soluble dye.

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43. (Original) The method of claim 23 wherein the step of removing solvent includes heating the substrate and the composition to evaporate at least some of the solvent.
44. (Original) The method of claim 23 wherein the imageable coating is soluble in water.
45. (Original) A method of making an imaged printing plate having ink-receptive image areas, the method comprising:
 - applying to the substrate a composition comprising a solvent and a sulfated phenolic resin dispersed in the solvent, the sulfated phenolic resin having an average molecular weight in the range of about 1 kDa to about 500 kDa; removing at least some of the solvent to leave an imageable coating on the substrate;
 - imagewise exposing the coating to imaging radiation to produce exposed areas and unexposed areas of the coating; and
 - contacting the coating with a liquid developer to remove unexposed areas of the coating, while leaving exposed areas as ink-receptive image areas, to yield the imaged printing plate.
46. (Original) The method of claim 45 wherein the substrate includes an oleophobic surface that is covered with the imageable coating prior to imagewise exposure, and that becomes uncovered in areas from which the unexposed areas of the coating are removed.
47. (Original) The method of claim 45 wherein the substrate includes a hydrophilic surface that is covered with the imageable coating prior to imagewise exposure, and that becomes uncovered in areas from which the unexposed areas of the coating are removed.
48. (Original) The method of claim 45 including the step of aging the imageable coating for at least about two days before imagewise exposing the coating.
49. (Original) The method of claim 45 wherein the imaging radiation includes infrared radiation.
50. (Original) The method of claim 45 wherein the composition includes a dye that is sensitive to the imaging radiation.

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51. (Original) The method of claim 50, wherein the dye is selected from the group consisting of cyanine dyes, squarylium dyes, and oxonol dyes.

52. (Original) The method of claim 45, including the step of heating both exposed areas and unexposed areas of the coating before contacting the coating with a liquid developer.

53. (Original) The method of claim 45, wherein the liquid developer comprises water.

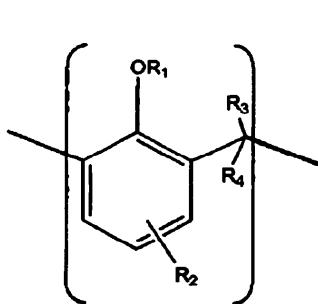
54. (Original) The method of claim 45, wherein the liquid developer is water.

55. (Original) The method of claim 45, wherein a period of at least about two days is permitted to elapse after imagewise exposing the coating and before contacting the coating with a liquid developer.

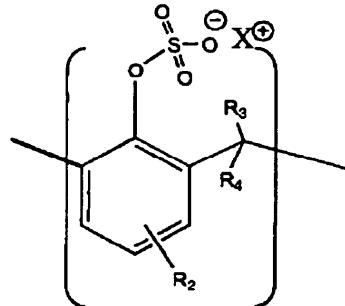
56. (Original) The method of claim 45, wherein the liquid developer is a fountain solution/ink dispersion, and the step of contacting the coating with the liquid developer is done on-press.

57. (Original) A composition comprising a sulfated phenolic resin having an average molecular weight in the range of about 1 kDa to about 500 kDa.

58. (Currently amended) The composition of claim 57, wherein the sulfated phenolic resin includes units having the structure A and units having the structure B,



A



B

wherein substituents R₁, R₂, R₃, and R₄ are independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, aryl, alkaryl, or aralkyl; X[⊕] represents a positively charged counterion; and

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the ratio m is defined as the ratio of the number of B units to the sum of the number of A units plus the number of B units, and m in the range from about 0.25 to 1.0.

59. (Original) The composition of claim 58, wherein m is greater than about 0.5.
60. (Original) The composition of claim 58, wherein X^{\oplus} is selected from the group consisting of lithium ion, potassium ion, and sodium ion.
61. (Original) The composition of claim 58, wherein X^{\oplus} is selected from the group consisting of ammonium, alkylammonium, aryl ammonium, cyclic ammonium, pyrrolidinium, pyridinium, diazonium, sulfonium, and iodonium.
62. (Original) The composition of claim 58, wherein X^{\oplus} is ammonium.
63. (Original) The composition of claim 57, wherein the sulfated phenolic resin is characterized by an average molecular weight of about 1 kDa to about 500 kDa.
64. (Original) The composition of claim 57, wherein the composition is water-soluble.
65. (Original) The composition of claim 57, wherein the composition consists essentially of the sulfated phenolic resin.
66. (Original) The composition of claim 57, comprising a radiation-absorbing component, and wherein the composition is thermally sensitive.
67. (Original) The composition of claim 66, further comprising a polymeric binder.

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